The Mediator Effect of Knowledge Management Orientation in the Relationship between Information Technology Support and Knowledge Quality

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***Abstract*— This correlational study assessed the effect of information technology within the health sector on knowledge quality. In this context, the mediator roles of explicit and tacit knowledge management orientation in the relationship between information technology and knowledge quality were investigated.**

Healthcare employees of four public hospitals in Konya that is a province of Turkey were administrated knowledge quality scale of wood (2005), explicit and tacit knowledge management orientation scale and information technology support scale, which were developed by Choi and Lee (2003) and cited from the study of Wood (2005).

Study results focused on that information technology among healthcare employees has a positive effect on knowledge quality and explicit and tacit knowledge management orientation has a mediator role within this relation.

***Index Term:s* Knowledge management orientation, information technology support, knowledge quality, healthcare management.**

I. KNOWLEDGE QUALITY

Knowledge reflects recognition, absorption and exploitation of managerial skills and assets to achieve and function organizational activities, facilities and goals [1]. Sustainable and quality knowledge provide opportunities for analyzing and estimating future activities and resources [2]. Besides, knowledge management comprises research and development activities; hence it supports innovative ideas and implementations by using knowledge in order to improve quality of organizational resources and systems [1].

Knowledge quality as an important of knowledge management is related with various components and tools such as knowledge acquisition, selection, generation, internalization and externalization and also knowledge leadership, coordination, control and measurement [3]. Reaching quality knowledge is consisted of many steps as, providing immediate access to required information for users, suitability of knowledge with field or organization used and sharing knowledge among users by controlling income and outcome features of the knowledge used and needed [4]. Knowledge management reflects the strategy to obtain necessary knowledge from the appropriate resources at the right time and use and share it with the right users in the right way as needed [5].

Considering as connections and interactions of an organization with its partners, suppliers and customers hence it requires quality knowledge in order to enhance organizational opportunities and networks within the environment [6].

II. INFORMATION TECHNOLOGY (IT) SUPPORT

In global environment, generating new knowledge and using this new and current knowledge reflect a demanding structure and concept by society [7]. Information technology presents many benefits for organizations such as achieving effective strategies; supporting learning experiences, cost saving and finding resources [8]. Accordingly, information technology support focuses on efficient storage, presenting solutions for possible conflicts and also this structure covers integrated models or systems [9] so that individuals can possess the whole picture of the organization work flaw.

Information technology has an impact on organizational relationships and supporting trusty between individuals, since it contributes to transparency [10]. Two main concepts related with the information system of an organization are exists in the system setting. While one of these concepts is immediate access to required and appropriate information, the other one is about allowing system to reach needed information by selecting appropriate commands, records and repository in databases [11]. Therefore, information systems are occurred to serve various strategic, managerial, operational knowledge and benefits as macro viewpoint and also required different kinds of components as micro perspective and specially such as decision making process and ability [8]. Additionally, information technology is related with patient safety by providing useful knowledge for treatment and facilitating communication between patient and healthcare professionals [12]. Additionally, information technology support is required to manage change process within the organization [7].

Information technology support is a key for preventing medical errors, since it provides enhancing access to patient

information quickly and on time [12]. For instance, electronic appointments used in patient care can be classified as one of the tools of information technology support in order to receive required information and share it with both patient and healthcare professionals, hence it provides an effective intervention, treatment and surgery process [13]. In health care, knowledge quality presents an inclusive impact on patient safety by reporting knowledge or healthcare professionals related with patients and diseases and also this reported knowledge can improve self confidence of professionals while they use the knowledge in decision making process [14]. The value degree of information is a discussable, survival and crucial concept for providing and setting an effective decision system [15]. As based on mentioned perspective of the value of knowledge above, the relationship between information technology support and knowledge quality was proved to be investigated by Hypothesis 1.

H1. Information technology support is positively associated withknowledge quality.

III. KNOWLEDGE MANAGEMENT ORIENTATION

Knowledge includes a dynamic capacity in order to provide competitive advantage within knowledge and especially technology based environment [16]. Systems, abilities and know- how are named as dimensions of knowledge management in order to achieve organizational goals [17]. Knowledge management reflects a process of sharing, using and saving knowledge to enhance development and performance of organization [18]. Organizations should improve knowledge management system through new knowledge and capabilities in order to enhance its strategic and operational place within competitive environment [19].

Knowledge management tools and components can be used as an indicator of organizational performance and gained competitive advantage in terms of financial and marketing processes within the organizational environment [20]. Besides, knowledge management presents ability of sharing knowledge and reaching data from different resources within social and operational processes and required individual efforts and interactions in this data obtaining process [21].

Knowledge creation reflects data or information acquisition and feedback, also accessibility to knowledge in order to provide presentation, browsing and searching related data in terms of supporting online collaboration, sharing and getting required information alerts among users [22]. Knowledge creation can be identified as generating new knowledge, ideas and solutions as related and required situation, problem or activity [5]. Two types of knowledge can be classified as tacit and explicit knowledge. Tacit knowledge can be identified as ideas in individuals' minds as internalization through learning. Besides, explicit knowledge reflects externalization and sharing experiences and interacting with others [18].

In health care, knowledge management structure displays a framework by integrating administrative, clinical and financial processes that generated and shaped among patients, clinics, pharmacies and suppliers [23]. Knowledge is generated by clinical evidence, based on diagnosis or treatment, operations and surgeries by healthcare professionals in health care sector, however, many healthcare data gets lost due to lack and difficulty of documentation and without knowledge management system [24]. In the light of knowledge management in health care literature and considering knowledge generating process and the role of healthcare professionals' interactions and sharing styles in this pattern, Hypothesis 2a was developed.

H2a. In the relationship between information technology support and knowledge quality, explicit orientationhave an impact of mediator.

Human capital, as one of the dimension of knowledge management is associated with public relations of organization and valued as tacit knowledge as related with ideas in the employees' minds [20]. As a component of knowledge management process, the role of tacit knowledge as related with the issue in health care was experienced by developed Hypothesis 2b.

H2b. In the relationship between Information technology support and knowledge quality, tacit orientation have an impact of mediator.

IV. METHOD

Research Model

In this study, the relations with information technology (IT) support, explicit orientation, and knowledge quality among healthcare employees were analyzed. The data was evaluated by the packet program of SPSS 10.0. In order to examine the content validity of these measures, we performed confirmatory factor analysis (CFA) and path analysis with LISREL VIII [25][26][27][28].

Participants

Our surveys were carried out with 300 health care employees in the health sector providing services at four hospitals in the province of Konya, Turkey. The sample mostly consisted of female participants, associate healthcare employees, married, and people graduated from a undergraduate education. And the percentages were 64.7%, 79.7%, 53.7%, 47.7%, respectively. The most of participants are between the ages of 18 and 29 (%56.7). Average age of the participants is 29.58, and work experience is 4.91 years.

Instrumentation

In the study knowledge quality scale, explicit-tacit orientation scale and information technology (IT) supportscale were used. More detailed information is given about the scales below.

Knowledge Quality: The scale was obtained from the study of Wood (2005) and consisted of one dimension. The Cronbach's alpha value for the IT scale was 0.85. Validity of

knowledge quality scale has been identified by using confirmatory factor analysis [26]. In the initial version, good adaptive values could not be reached (Goodness-of-Fit Statistics: $\chi 2/df$ =71.97/9=7.9, NNFI=.85, NFI=.90, CFI=.91, AGFI=.93, GFI=.93, RMSEA=.15). One item that show correction indices (13. item) have been removed from the scale. CFA has been applied. Goodness-of-Fit Statistics: $\chi 2/df$ =11.12/5=2.22, NNFI=.98, NFI=.98, CFI=.99, AGFI=.96, GFI=.99, RMSEA=.06. All the above fit indices for the CFA model indicated an acceptable fit. The knowledge quality scale' Cronbach Alpha values were found to be .82. Mean values and standard deviations were found higher; additionally the *t* values of all scales were significant. Factors were examined for levels of total-item correlations of the internal consistency for scale. The item-total correlations for the items were: values ranging between .71 and .81 ratings. According to these scales, showing a good level of internal consistency for the scale could be accepted.

Explicit Orientation: The scale, which was originated from the study of Choi and Lee (2003), was obtained from Wood's (2005) study and consisted of just four items. The Cronbach's alpha value for the scale was 0.83. Validity of explicit orientation scale has been identified by using confirmatory factor analysis. In the initial version, good adaptive values could not be reached (Goodness-of-Fit Statistics: $\chi 2/df$ =24.10/2=12.05, NNFI=.83, NFI=.94, CFI=.94, AGFI=.81, GFI=.96, RMSEA=.19). One item that show correction indices (21. item) have been removed from the scale. CFA has been applied. All the above fit indices for the CFA model indicated an acceptable fit. The explicit orientation scale' Cronbach Alpha values were found to be .75. Mean values and standard deviations were found higher. In addition, the *t* values of all scales were significant. The item-total correlations for the items were: values ranging between .80 and .83 ratings. According to these scales, showing a good level of internal consistency for the scale could be accepted.

Tacit Orientation: The scale, which was originated from the study of Choi and Lee (2003), was obtained from Wood's (2005) study and consisted of just four items. Cronbach's alpha computed score was 0.79. Validity of tacit orientation scale has been identified by using confirmatory factor analysis. In the initial version, good adaptive values could not be reached (Goodness-of-Fit Statistics: $\chi 2/df$ =24.10/2=12.05, NNFI=.83, NFI=.94, CFI=.94, AGFI=.81, GFI=.96, RMSEA=.19). In the final analysis, it has been not achieved high reliability scale. One item that show correction indices (24. item) have been removed from the scale. All the above fit indices for the CFA model indicated an acceptable fit. The tacit orientation scale' Cronbach Alpha values were found to be .71. Mean values and standard deviations were found higher. In addition, the *t* values of all scales were significant. The item-total correlations for the items were: values ranging between .76 and .83 ratings. According to these scales, showing a good level of internal consistency for the scale could be accepted.

Information Technology (IT) Support: The scale, which was originated from the study of Choi and Lee (2003), was obtained from Wood's (2005) study and consisted of just five items. The Cronbach's a value for the IT scale was 0.86. Validity of information technology support scale has been identified by using confirmatory factor analysis. In the initial version, good adaptive values could not be reached (Goodness-of-Fit Statistics: $\chi 2/df$ =33.87/5=6.77, NNFI=.92, NFI=.96, CFI=.96, AGFI=.87, GFI=.96, RMSEA=.13). One item that show correction indices (35. item) have been removed from the scale. CFA has been applied. Goodness-of-Fit Statistics: $\chi 2/df$ =6.35/5=3.17, NNFI=.98, NFI=.99, CFI=.99, AGFI=.95, GFI=.99, RMSEA=.08. All the above fit indices for the CFA model indicated an acceptable fit. The information technology support scale' Cronbach Alpha values were found to be .86. Mean values and standard deviations were found higher. In addition, the *t* values of all scales were significant. The item-total correlations for the items were: values ranging between .79 and .86 ratings. According to these scales, showing a good level of internal consistency for the scale could be accepted.

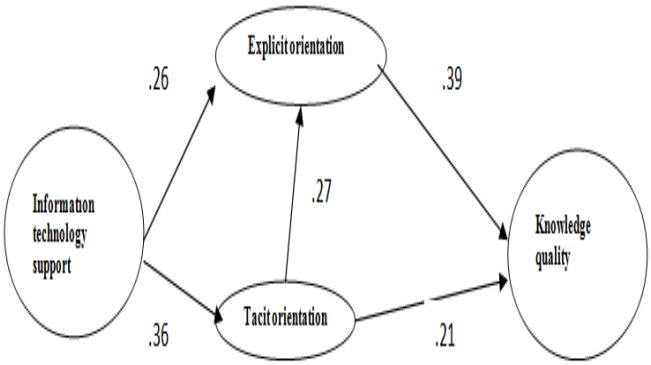
V. FINDINGS

The Structural Model

Suggested by Baron and Kenny (1986) for testing hypothesis H1 and determining mediating effect of knowledge management orientation, data have been analyzed under conditions of the intermediate variable (Şimşek, 2007: 25, 31). In the first stage, the relation between information technology support and knowledge quality have been determined by all-alone path analysis. At the result of the path analysis done it has been determined the path coefficient between information technology support and knowledge quality as .27 ($p<.01$). It could be stated the model is acceptable because obtained values in the model are yield values of Goodness-of-fit.(Goodness-of-Fit Statistics: $\chi 2/df$ =0.0/0=0, RMSEA=.00). In the second stage it has been examined the model in model 2 in order to specify the effect of intermediate variable of explicit and tacit knowledge management orientation between information technology support and knowledge quality. After the examination done it has been located that the relations are significant between information technology support and explicit knowledge management orientation (.35, $p<.01$), explicit knowledge management orientation and knowledge quality (.39, $p<.01$).

After the examination done it has been located that the relations are significant between information technology support and tacit knowledge management orientation (.36,$p<.01$), tacit knowledge management orientation and knowledge quality (.21, $p<.01$). According to these results all the conditions of intermediate variables have been fulfilled. In the model, good adaptive values could not be reached (Goodness-of-Fit Statistics: $\chi 2/df$ =22.49/2=11.24, NNFI=.66, NFI=.88, CFI=.89, AGFI=.82, GFI=.96, RMSEA=.18). Although all relations are significant, the model does not show adaptive values, since a new path was suggested in the model. The lack of any relationship between

information technology support and knowledge quality has designated complete mediation; the significant relationship and decrease of correlation coefficient have indicated partial mediation [29]. Ultimately, conditions of second phase were fulfilled in the model. In last phase, a new direct path from information technology support to knowledge quality and it was found as insignificant (p>.05, *t*=1.18). In the model, a path from tacit knowledge management orientation to explicit knowledge management orientation was suggested. Structured equation modeling was performed once again by adding this path and Model 3 was reached.



Goodness-of-Fit Statistics: $\chi 2/df = 1.47/1 = 1.47$, NNFI=.98, NFI=.99, CFI=1.00, AGFI=.98, GFI=1.00, RMSEA=.04.

Fig. 1: Model 3 (Model of the result)

In the third stage it has been examined model 3. After the examination done it has been located that the relations are significant between explicit knowledge management orientation and tacit knowledge management orientation (.27, p <.01). In the ultimate model, explicit knowledge management orientation and tacit knowledge management orientation exhibit a mediator role in the relationship between information technology support and knowledge quality. Hereunder, Hypothesis 1, Hypothesis 2a and Hypothesis 2b were accepted.

VI. CONCLUSION

The effect of information technology on knowledge quality in health sector was investigated within the study. In this context, the mediator roles of explicit and tacit knowledge management orientation in the relationship between information technology and knowledge quality were investigated.

Study results focused on that information technology among healthcare employees has a positive effect on knowledge quality and explicit and tacit knowledge management orientation has a mediator role within this relation. Generally, information systems function in administrative processing, management reporting, decision support, executive support and expert systems, that is to say n many different fields as a multidimensional structure and framework [8]. In the light of the importance of knowledge quality, information technology in healthcare impacts quality patient care and supplies financial investment by presenting solutions for progressing problem and providing information from patient record databases [13]. Specifically, common medical terminology and effective knowledge acquisition are the main criteria for setting of knowledge management system in healthcare [24].

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